

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-071015

(43)Date of publication of application : 18.03.1997

(51)Int.Cl.

B41J 11/70

B41J 11/66

B41J 25/20

H04N 1/00

H04N 1/23

(21)Application number : 07-250132

(71)Applicant : RICOH CO LTD

(22)Date of filing : 05.09.1995

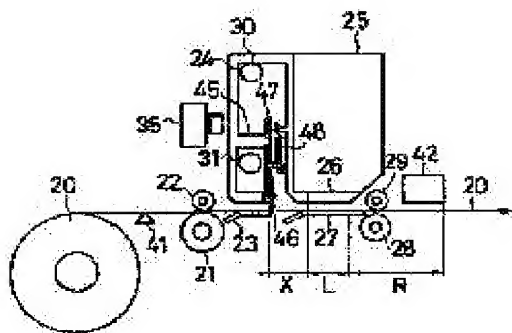
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## (54) RECORDING DEVICE AND IMAGE COMMUNICATION DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a recording device and image communication device in which a cutter means for cutting a roll-shaped record sheet can be made smaller and the device can be miniaturized.

SOLUTION: Since a cutter means for a record sheet 20 is provided in a carriage 24, a device can be miniaturized. And a cutter blade 46 of the cutter means can be exposed or stored in response to the movement of the carriage 24, and hence such a means as a control means for the cutter means is not needed so that the device can be miniaturized and costs of the device can be reduced.



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**CLAIMS**

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[Claim(s)]

[Claim 1] In a recorder which is provided with an ink jet recording head as a printhead, carries out reciprocation moving of the carriage which carries the ink jet recording head crosswise [ of a rolled form recording form / record ], and records information on the rolled form recording form, A recorder delivering paper after providing a cutter means which cuts out the rolled form above-mentioned recording form in the above-mentioned carriage and cutting out the rolled form above-mentioned recording form after record by the above-mentioned cutter means.

[Claim 2] A cutter blade with which said cutter means cuts out said rolled form recording form, When said carriage is moved to a position beyond recording end position of the record cross direction of the rolled form above-mentioned recording form, expose to a position which can be judged and the above-mentioned cutter blade in the state. The recorder according to claim 1 having a cutter blade exposure storing means which stores the above-mentioned cutter blade when the above-mentioned carriage was moved to a position before a recording start position of the record cross direction of the rolled form above-mentioned recording form.

[Claim 3] While performing a predetermined pictorial communication control procedure and performing predetermined picture information communication operation between mating terminals, Have an ink jet recording head as a printhead, and reciprocation moving of the carriage which carries the ink jet recording head is carried out crosswise [ of a rolled form recording form / record ], In pictorial communication equipment provided with a recorder which records a reception picture on the rolled form recording form, A cutter means which is provided in the above-mentioned carriage and cuts out the rolled form above-mentioned recording form, While using the above-mentioned cutter means whenever it records a reception picture for 1 page on the rolled form above-mentioned recording form, and cutting out the rolled form above-mentioned recording form, after ending record of a reception picture of the last page of 1 communication, Pictorial communication equipment provided with a decision control means which cuts out the rolled form above-mentioned recording form using the above-mentioned cutter means while conveying the rolled form above-mentioned recording form so that a predetermined mark may be recorded and the mark may be divided in the abbreviated center section of the transportation direction of a recording form.

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]**

[0001]

[Field of the Invention] This invention is provided with an ink jet recording head as a printhead, and reciprocation moving of the carriage which carries the ink jet recording head is carried out crosswise [ of a rolled form recording form / record ], While performing the recorder which records information on the rolled form recording form, and a predetermined pictorial communication control procedure and performing predetermined picture information communication operation between mating terminals, It has an ink jet recording head as a printhead, reciprocation moving of the carriage which carries the ink jet recording head is carried out crosswise [ of a rolled form recording form / record ], and it is related with pictorial communication equipment provided with the recorder which records a reception picture on the rolled form recording form.

[0002]

[Description of the Prior Art] In recent years, the thing provided with what is called an ink jet type recorder (henceforth an ink jet printer) is used as a recorder for carrying out the record output of the reception picture in the small facsimile machine. In this device, the rolled form recording form is used for the miniaturization.

[0003]

[Problem(s) to be Solved by the Invention] However, such conventionally, with the device, after carrying out the end of record of the reception picture, the cutter device for cutting out a rolled form recording form needed to be formed independently, and it had become the hindrance of the miniaturization of a device.

[0004] This invention is made in view of this actual condition, and can constitute the cutter means for cutting out a rolled form recording form small, and an object of this invention is to provide the recorder and pictorial communication equipment which can contribute to the miniaturization of a device.

[0005]

[Means for Solving the Problem] This invention is provided with an ink jet recording head as a printhead, and reciprocation moving of the carriage which carries the ink jet recording head is carried out crosswise [ of a rolled form recording form / record ], A cutter means which cuts out the rolled form above-mentioned recording form is provided in the above-mentioned carriage, and after cutting out the rolled form above-mentioned recording form after record by the above-mentioned cutter means, it is made to deliver paper in a recorder which records information on the rolled form recording form.

[0006] A cutter blade with which said cutter means cuts out said rolled form recording form, When said carriage is moved to a position beyond recording end position of the record cross direction of the rolled form above-mentioned recording form, expose to a position which can be judged and the above-mentioned cutter blade in the state. If the above-mentioned carriage is moved to a position before a recording start position of the record cross direction of the rolled form above-mentioned recording form, it is realizable by being the thing provided with a cutter blade exposure storing means which stores the above-mentioned cutter blade.

[0007] While performing a predetermined pictorial communication control procedure and performing predetermined picture information communication operation between mating terminals, Have an ink jet recording head as a printhead, and reciprocation moving of the carriage which carries the ink jet recording head is carried out crosswise [ of a rolled form recording form / record ], In pictorial communication

equipment provided with a recorder which records a reception picture on the rolled form recording form, A cutter means which is provided in the above-mentioned carriage and cuts out the rolled form above-mentioned recording form, While using the above-mentioned cutter means whenever it records a reception picture for 1 page on the rolled form above-mentioned recording form, and cutting out the rolled form above-mentioned recording form, after ending record of a reception picture of the last page of 1 communication, A predetermined mark is recorded, and while conveying the rolled form above-mentioned recording form so that the mark may be divided in the abbreviated center section of the transportation direction of a recording form, it has a decision control means which cuts out the rolled form above-mentioned recording form using the above-mentioned cutter means.

[0008]

[Embodiment of the Invention]Hereafter, the example of this invention is described in detail, referring to an accompanying drawing.

[0009]Drawing 1 shows the group 3 facsimile machine concerning one example of this invention.

[0010]The system control part 1 in the figure The control management of each part of this group 3 facsimile machine, And perform various control management, such as facsimile-transmission control-procedure processing, etc., and the system memory 2, When executing the control processing program which the system control part 1 executes, and a processing program, while memorizing required various data etc., Constituting the work area of the system control part 1, the parameter memory 3 is for memorizing various kinds of information peculiar to this group 3 facsimile machine.

[0011]The scanner 4 is for reading a manuscript picture in predetermined resolution, is for the plotter 5 carrying out the record output of the picture in predetermined resolution, and consists of ink jet printers. The operation display 6 is for operating this facsimile machine, and consists of various kinds of operation keys and various kinds of displays for indication.

[0012]While the coding decoding section 7 carries out coding compression of the picture signal, it is for decrypting the drawing information by which coding compression is carried out to the original picture signal, and the image storage device 8 is for memorizing many drawing information in the state where coding compression was carried out.

[0013]The group 3 facsimile modem 9 is for realizing the modem function of group 3 facsimile, It has the slow-modem function (V. 21 modems) for exchanging a transmission protocol signal, and the fast modem function (V. 17 modems, V.33 modem, V.29 modem, V.27ter modem, etc.) for mainly exchanging drawing information.

[0014]The network control unit 10 is for connecting this facsimile machine to a dial-up line network, and is provided with the automatic sending-and-receiving function.

[0015]these system control parts 1, the system memory 2, the parameter memory 3, the scanner 4, the plotter 5, the operation display 6, the coding decoding section 7, the image storage device 8, and the group 3 facsimile modem 9 -- and, The network control unit 10 is connected to the internal bus 11, and the exchange of the data between each of these elements is performed mainly via this internal bus 11.

[0016]The exchange of the data between the network control unit 10 and the group 3 facsimile modem 9 is performed directly.

[0017]Drawing 2 and drawing 3 show the important section of the printing mechanism of the plotter 5.

[0018]In a figure, the tip of the rolled form recording form 20, It is inserted between the transportation roller 21 and the counter roller 22, and is conveyed in a transportation direction, It passes through between the guide plate 23, the print head section 26 of the printing head unit 25 attached to the crevice between the lower end parts of the carriage 24, and the carriage 24 enabling free attachment and detachment, and the guide plates 27 one by one, and paper is inserted and delivered between the discharge roller 28 and the counter roller 29.

[0019]The move direction is prescribed by one pair of parallel guide bars 30 and 31, and the carriage 24 is connected with the belt 34 currently wound among the belt pulleys 32 and 33.

[0020]If it is moved to a 2-way by the drive of the carriage motor 35 and the carriage motor 35 drives to a forward direction, the carriage 24 will move to a scanning direction, and this belt 34 will move in the return direction in the carriage 24, if the carriage motor 35 drives in the return direction.

[0021]Here, the carriage 24 is located in the home position HP (position shown with the right-hand side dashed dotted line) by the side of the rightmost of a figure (namely, most the return side) at the standby middle class. At the time of printing operation, reciprocation moving of the carriage 24 is carried out

between printing start position SP (position shown as the solid line), and print end position EP (position of a left-hand side dashed dotted line). When exposing the cutter blade (after-mentioned) for cutting out the recording form 20, it is moved to cutter on position CP which moved to the scanning direction rather than print end position EP.

[0022]Are it for detecting that the carriage 24 is moving the initialization sensor 36 to the home position HP, and the cap mechanism 37, It is in the state which the carriage 24 is moving to the home position HP, and is to prevent the print head section 26 from blockading the print head section 26 of the printing head unit 25, and drying.

[0023]The transportation roller 21 and the discharge roller 28, When it drives with the driving force of the transportation motor 40 and the transportation motor 40 drives to a forward direction, the transportation roller 21 and the discharge roller 28, If the recording form 20 is conveyed to a transportation direction and the transportation motor 40 drives to a counter direction, the transportation roller 21 and the discharge roller 28 will convey the recording form 20 to an anti-transportation direction.

[0024]The recording paper sensor 41 for detecting the recording form 20, The ink end mark sensor 42 for detecting the ink end mark (after-mentioned) which was allocated by the position which can detect the recording form 20 before the transportation roller 21, and was recorded on the recording form 20 is formed in the transportation direction downstream rather than the paper ejecting roller 28.

[0025]To the tip part of the projection 45 with the stage provided inside the carriage 24. The bracket 47 with which the cutter blade 46 is attached enabling free rotation is formed in that end, enabling free rotation, and the spring 48 is wound this bracket 47 and inside the carriage 24.

[0026]And when it moves to cutter on position CP in the carriage 24, the bracket 47 runs against the boss 49 provided in the cut position side, and by that cause, As shown in drawing 4 (a), the bracket 47 rotates to the clockwise direction of a figure, and the cutter blade 46 projects from the lower end part of the carriage 24. In this state, since the power in which the spring 48 acts tends to rotate the bracket 47 to the clockwise direction of a figure, the state where the cutter blade 46 projects from the lower end part of the carriage 24 is maintained by forming the stopper 50 which receives the applied force of that spring 48.

[0027]In thus, the state where the cutter blade 46 has projected from the lower end part of the carriage 24. When it moves to the home position HP in the carriage 24, the bracket 47 runs against the boss 51 provided in the home position side, and by that cause, As shown in the figure (b), the bracket 47 rotates in the counter clockwise direction of a figure, and the cutter blade 46 is accommodated in the inside of the carriage 24. In this state, since the power in which the spring 48 acts tends to rotate the bracket 47 in the counter clockwise direction of a figure, the state where the cutter blade 46 is accommodated in the inside of the carriage 24 is maintained by forming the stopper 52 which receives the applied force of that spring 48.

[0028]The size of the print head section 26 of the printing head unit 25 parallel to the transportation direction of the recording form 20 is L, and the distance from the cutter blade 46 to the print head section 26 is X about the direction, and the distance from the print head section 26 to the ink end mark sensor 42 is R.

[0029]Drawing 5 shows an example of the important section of the control system of the plotter 5.

[0030]In the figure, the detecting signal S1 outputted from the initialization sensor 36, the detecting signal S2 outputted from the recording paper sensor 41, and the detecting signal S3 outputted from the ink end mark sensor 42 are added to the recording control section 55.

[0031]The recording control section 55 outputs the printing data inputted from the external device to the printing unit 56 while it controls the predetermined recording operation of the plotter 5 and carries out drive controlling of the carriage motor 35 and the transportation motor 40.

[0032]With the above composition, the recording control section 55 will perform processing as shown in drawing 6, if the print command for carrying out the record output of the reception picture is received from the system control part 1, for example.

[0033]Namely, until the home position HP to printing start position SP will move in the carriage 24 (processing 102) and it will end the recording operation for 1 page, if a print command is received and the result of the judgment 101 is set to YES, Repeat execution of the printing operation of the printing data inputted via the internal bus 11 is carried out the whole reciprocation operation of the carriage 24 (the processing 103, NO loop of the judgment 104). While the carriage 24 carries out reciprocation moving of the print end position EP to printing start position SP, according to the position of the print head section

26, from the recording control section 55, in this printing operation, it is fundamentally outputted one by one to the printing unit 56 by printing data, and by that cause, A picture is recorded on the recording form 20 per printing of the print head section 26. Printing operation of the print head section 26 may be performed also in the period when the carriage 24 returns from print end position EP even to printing start position SP further with the case where only the period which the carriage 24 moves even to print end position EP from printing start position SP is performed. Only movement of the carriage 24 may be performed without a blank part performing printing operation.

[0034]Thus, an end of the image recording for 1 page will move to cutter on position CP in the carriage 24 (processing 105). Thereby, as mentioned above, the bracket 47 runs against the boss 49, the cutter blade 46 is exposed from the lower end part of the carriage 24, the state is held, and this will be in the state which can cut the recording form 20.

[0035]In the state, it moves to the home position HP in the carriage 24 (processing 106). Since the recording form 20 is located in the position which the cutter blade 46 passes in the crevice between the guide plate 23 and the guide plate 27 at this time, If the recording form 20 is cut and the carriage 24 returns to the home position HP with the cutter blade 46, as mentioned above, the bracket 47 will run against the boss 51, the cutter blade 46 will be accommodated in the inside of the carriage 24, and the state will be held.

[0036]Thus, since the image recording for 1 page was ended and the recording form 20 of the portion which carried out image recording was separated, the recording form 20 is discharged (processing 107) and paper is delivered to the recording form 20 for 1 page which carried out image recording.

[0037]Subsequently, when it investigates whether it is reported that the image recording of all the pages was completed from the system control part 1 (judgment 108) and the result of the judgment 108 is set to NO, it returns to the processing 102 and image recording operation of the next page is performed. Since a series of image recording operation was ended when the result of the judgment 108 was set to YES, this processing is ended.

[0038]Thus, in this example, since the cutter blade 46 and the exposure housing mechanisms of the cutter blade 46 were provided in the inside of the carriage 24, the cutter means which cuts out the recording form 20 can be constituted very small, and the plotter 5 can be miniaturized.

[0039]Since it is made to carry out switch operation of the exposure storage of the cutter blade 46 by the two bosses 49 and 51 allocated in the outside of the range which the carriage 24 moves at the time of image recording, the on-off control mechanism of a cutter means can be formed very small, and it can contribute to the miniaturization of the plotter 5.

[0040]Drawing 7 shows other examples of the image recording processing which the recording control section 55 performs.

[0041]Namely, until the home position HP to printing start position SP will move in the carriage 24 (processing 202) and it will end the recording operation for 1 page, if a print command is received and the result of the judgment 201 is set to YES from the system control part 1, Repeat execution of the printing operation of the printing data inputted via the internal bus 11 is carried out the whole reciprocation operation of the carriage 24 (the processing 203, NO loop of the judgment 204).

[0042]Thus, an end of the image recording for 1 page will print predetermined ink end mark ME (drawing 8 referring-to-; in this case solid black) for checking further the quantity of the ink currently stored by the printing head unit 25 (processing 205).

[0043]And it moves to cutter on position CP in the carriage 24 (processing 206). Thereby, as mentioned above, the bracket 47 runs against the boss 49, the cutter blade 46 is exposed from the lower end part of the carriage 24, the state is held, and this will be in the state which can cut the recording form 20.

[0044]Next, only the distance R conveys the recording form 20 to a transportation direction (processing 207), and the ink end mark sensor 42 changes into the state where ink end mark ME is detectable. Here, when it investigates whether the ink end mark sensor 42 detected ink end mark ME, and outputted the detecting signal S3 (judgment 208) and the result of the judgment 208 is set to NO, predetermined ink end error handling which reports that ink was lost is performed (processing 209). Processing 209 is not performed when the result of the judgment 208 is set to NO.

[0045]Subsequently, only the distance R conveys the recording form 20 to an opposite direction, the image recording rear end part of the recording form 20 is moved to a predetermined cutting place (processing 210), and it moves to the home position HP in the state in the carriage 24 (processing 211).

Since the recording form 20 is located in the position which the cutter blade 46 passes in the crevice between the guide plate 23 and the guide plate 27 at this time, If the recording form 20 is cut and the carriage 24 returns to the home position HP with the cutter blade 46, as mentioned above, the bracket 47 will run against the boss 51, the cutter blade 46 will be accommodated in the inside of the carriage 24, and the state will be held.

[0046]Thus, if the image recording for 1 page is ended and the recording form 20 of the portion which carried out image recording is separated, When it investigates whether it is reported that the image recording of all the pages was completed from the system control part 1 (judgment 212) and the result of the judgment 212 is set to NO, it returns to the processing 202 and image recording operation of the next page is performed. At this time, when the recording form 20 is conveyed in connection with the image recording operation of the next page, paper is delivered to the recording form 20 of the already judged portion by the discharge roller 28.

[0047]When the result of the judgment 212 is set to YES, After only the distance S to an ejecting position conveys the recording form 20, delivering paper to the separated portion (processing 213) and ending the delivery of the last recording form 20, Only the distance S conveys the recording form 20 to an opposite direction, alignment of the tip position of the recording form 20 at the time of the following image recording is performed (processing 214), and this processing is ended.

[0048]Thus, since the ink end is inspected in this case whenever it ends the image recording for 1 page, image recording operation can be performed certainly.

[0049]Drawing 9 (a) and (b) shows the example of further others of the image recording processing which the recording control section 55 performs.

[0050]Namely, until the home position HP to printing start position SP will move in the carriage 24 (processing 302) and it will end the recording operation for 1 page, if a print command is received and the result of the judgment 301 is set to YES from the system control part 1, Repeat execution of the printing operation of the printing data inputted via the internal bus 11 is carried out the whole reciprocation operation of the carriage 24 (the processing 303, NO loop of the judgment 304).

[0051]Thus, an end of the image recording for 1 page will move to cutter on position CP in the carriage 24 (processing 305). Thereby, as mentioned above, the bracket 47 runs against the boss 49, the cutter blade 46 is exposed from the lower end part of the carriage 24, the state is held, and this will be in the state which can cut the recording form 20.

[0052]When it investigates whether it is reported that the image recording of all the pages was completed from the system control part 1 (judgment 306) and the result of the judgment 306 is set to NO, Only the distance X moves the recording form 20 to an opposite direction, and it is made in agreement [ the picture rear end part of the recording form 20 which ended image recording ] with the cutting place of the cutter blade 46 (processing 307).

[0053]In the state, it moves to the home position HP in the carriage 24 (processing 308). Since the recording form 20 is located in the position which the cutter blade 46 passes in the crevice between the guide plate 23 and the guide plate 27 at this time, If the recording form 20 is cut and the carriage 24 returns to the home position HP with the cutter blade 46, as mentioned above, the bracket 47 will run against the boss 51, the cutter blade 46 will be accommodated in the inside of the carriage 24, and the state will be held.

[0054]Thus, if the image recording for 1 page is ended and the recording form 20 of the portion which carried out image recording is separated, it will return to the processing 302 and image recording operation of the next page will be performed.

[0055]When the result of the judgment 306 is set to YES, predetermined ink end mark ME (refer to drawing 8) for checking the quantity of the ink currently stored by the printing head unit 25 is printed (processing 309). Next, only the distance R conveys the recording form 20 to a transportation direction (processing 310), and the ink end mark sensor 42 changes into the state where ink end mark ME is detectable.

[0056]Here, when it investigates whether the ink end mark sensor 42 detected ink end mark ME, and outputted the detecting signal S3 (judgment 311) and the result of the judgment 311 is set to YES, only distance  $(R + (L/2))$  conveys the recording form 20 to an opposite direction (processing 312). Thereby, the center of the recording paper conveyance direction of ink end mark ME is located in the cutting place of the cutter blade 46.



[0057]In the state, it moves to the home position HP in the carriage 24 (processing 313). Since the recording form 20 is located in the position which the cutter blade 46 passes in the crevice between the guide plate 23 and the guide plate 27 at this time, If the recording form 20 is cut and the carriage 24 returns to the home position HP with the cutter blade 46, as mentioned above, the bracket 47 will run against the boss 51, the cutter blade 46 will be accommodated in the inside of the carriage 24, and the state will be held.

[0058]Subsequently, after only the distance S to an ejecting position conveys the recording form 20, delivering paper to the separated portion (processing 314) and ending the delivery of the last recording form 20, Only the distance S conveys the recording form 20 to an opposite direction, alignment of the tip position of the recording form 20 at the time of the following image recording is performed (processing 315), and this processing is ended.

[0059]When the result of the judgment 311 is set to NO, predetermined ink end error handling which reports that ink was lost is performed (processing 316), it shifts to the processing 313 and processing after it is performed.

[0060]Therefore, in this example, after ending a mass of image recording operation, for example, the recording operation of the reception picture for one communication, ink end mark ME is recorded on the last record page, it records in the center section of the ink end mark ME, and 20 is judged. By that cause, as shown in drawing 10 (a) and (b), one half in the first half of ink end mark ME of the portions MEa are recorded on the portion of the last of the last page 20a of a certain image recording operation of a mass of, for example, Since one half in the second half of ink end mark ME of the portions MEb are recorded on the portion of the head of the start page 20b of the next image recording operation, the user can do easily work when classifying the recording form 20 to which paper was cut and delivered for every 1 image recording unit.

[0061]In this example, since alignment of the cutting place of the cutter blade 46 is carried out to the picture end position for 1 page whenever it ends the image recording in every page, the futility of the recording form 20 can be controlled and the running cost of a device can be reduced.

[0062]Although the example mentioned above explained the recorder which applied this invention to the plotter of the group 3 facsimile machine, this invention is applicable to the other same recorder similarly.

[0063]

[Effect of the Invention]As explained above, since the cutter means of the recording form is provided in the carriage according to this invention, the effect that a device can be miniaturized is acquired. Since it is made to perform exposure storage for the cutter blade of a cutter means according to movement of a carriage, while not requiring a means like the control means of a cutter means but being able to miniaturize a device, the effect that apparatus cost can be reduced is also acquired.

[0064]A mark is formed in the rear end part of the last page of a reception picture received by 1 receiving operation, and since a recording form is cut out so that the mark may be divided in the abbreviated center section of the transportation direction of a recording form, the effect that a settlement of the recording form for every reception can be judged easily is also acquired.